Chapter 9: Marine and Estuarine Assessment (Strategic Habitat Areas)

anticipated completion by 2009

Introduction

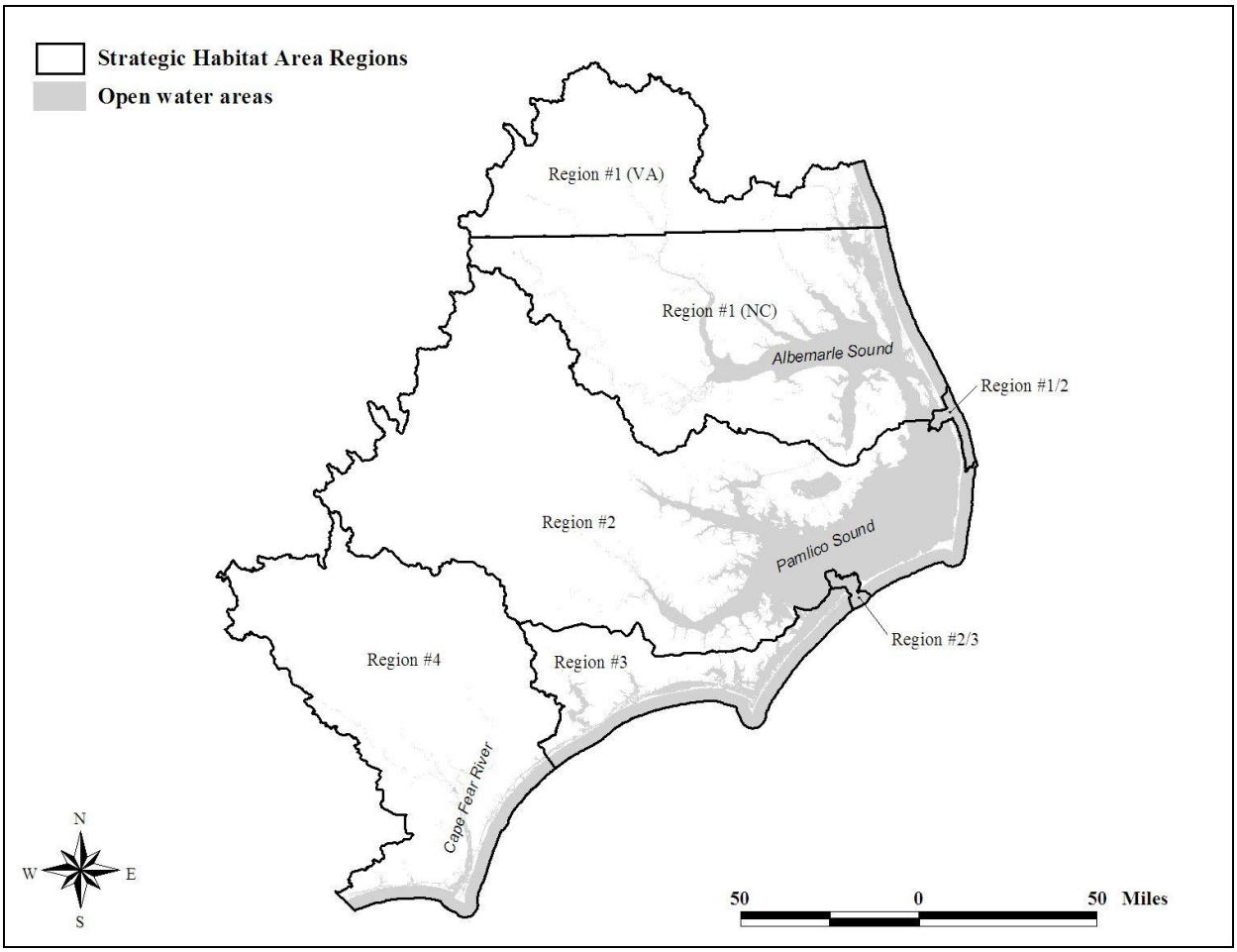
An ecological assessment of marine and estuarine habitats provides the foundation for locating Strategic Habitat Areas in coastal North Carolina. The identification and designation of Strategic Habitat Areas (SHAs) is a critical component in the implementation of North Carolina's approved Coastal Habitat Protection Plan (CHPP). Strategic Habitat Areas were defined in the CHPP as "specific locations of individual fish habitat or systems of habitats that have been identified to provide exceptional habitat functions or that are particularly at risk due to imminent threats, vulnerability, or rarity" (Street et al. 2005). Criteria for identifying SHAs were developed by an advisory committee of the Marine Fisheries Commission established in summer 2005. The committee developed a scientifically-based process for identifying candidate areas for designation, using biological data and the consensus of a regional expert panel. For a test case in Core/Bogue Sound, the SHA Committee served as the regional expert panel.

The designation of Strategic Habitat Areas is meant to identify priority aquatic areas for protection, enhancement and restoration. Once these areas are identified, resource managers can address gaps in existing management of these functionally important habitat areas and take steps to prevent further alteration of the system as a whole. Thus, the necessary protections may go above and beyond some current measures designed to protect habitat. Basically, the designation of SHAs is meant to address the continuing degradation and loss of important habitats referenced in the CHPP (Street et al. 2005).

The SHA designations are being made on a regional basis, with the coastline divided into 4 regions, as shown in Map 1: "Regional boundaries for Strategic Habitat Areas delineations." The SHA designation process is starting with Region 1, which includes the waters and adjacent wetlands draining into and out of Albemarle Sound through Oregon Inlet to the adjoining coastal ocean. The upstream boundary of the region follows the line separating coastal plain and piedmont physiographic regions of North Carolina and Virginia. The precise boundaries of the study area were based on a combination of USGS 12-digit hydrologic units and the CHPP management units for Albemarle Sound, Chowan River and Roanoke River (Street et al. 2005). The region intersects several counties, cities and municipalities in both North Carolina and Virginia.

Within Region 1, all six habitat types identified in the CHPP are present including: water column, soft bottom, shell bottom, submerged aquatic vegetation, wetlands and oceanic hard bottom (Street et al. 2005). The Albemarle Sound area was the focus of initial designations due to concern over declining river herring stocks and localized development pressures.

Map 1: Regional boundaries for Strategic Habitat Areas delineations



Methodology

The ecological assessment used in Region 1 uses numerous sources of GIS data representing the distribution and quality of coastal fish habitats. These data sources are detailed in Table 1: "Resource Data Themes." The GIS data provides the input for a site selection program that finds the targeted amount of each habitat with the least alteration in the smallest area possible. The expert panel then modifies the computer selections to more accurately reflect corroborating data and local knowledge. The amount of each habitat (42 subtypes) targeted fluctuated around 20-30 percent, depending on the relative abundance, sensitivity and alteration of habitat types.

However, the specific criteria for designation are continuing to evolve. Anticipated management actions will likely play a role in how much is designated. For relatively non-controversial protections (i.e., non-regulatory actions such as acquisition), the committee could designate large areas of relatively unaltered habitat with some degree of corroborating evidence. These large areas could represent the subset of highly rated aquatic habitats included in the Biodiversity / Wildlife Habitat Assessment.

The CHPP development team will prescribe management actions to accompany designation. The CHPP development team is composed of staff from Division of Marine Fisheries, Division of Coastal Management, Division of Water Quality, Wildlife Resources Commission, and other management authorities (as needed).

A concurrent effort to compile GIS data for other regions is underway, thus accelerating the completion of all areas.

Table 1. Resource Data Themes used for the location of Strategic Habitat Areas for marine fisheries in coastal North Carolina

Data Theme	Source(s)
Coastal Fish Habitats	
Submerged aquatic vegetation	Carroway and Priddy (1983); Ferguson and Wood (1994); DWQ (1998); Elizabeth City State University (2002- 2003-2006); DWQ (2005-2006-2007); and DMF Shellfish Habitat and Abundance Mapping Program (1988-present)
Shell bottom	DMF Shellfish Habitat and Abundance Mapping Program (1988-present)
Hard bottom	SEAMAP (2001)
Streams	National Hydrologic Dataset
Soft bottom	NOAA nautical chart bathymetry
Riparian wetlands	NWI (1981/1982/1983) and/or DCM (1994)
Corroborating Designations	
Anadromous fish spawning areas	MFC/WRC designation
Open shellfish harvesting waters	Division of Environment Health -Shellfish Sanitation classification
Oyster sanctuaries	MFC designation
Crab Spawning Sanctuary	MFC designation
Fish nursery areas	MFC designation
Corroborating Fish Data	
Juvenile anadromous and estuarine fish sampling	DMF programs 100, 120 and 135
Shellfish density sampling	DMF program 635
Freshwater stream bioclassification	DWQ assessment program

Basis for Ranking

Contiguous designations will likely be divided into parts representing areas for protection, enhancement, or restoration. Highly productive parts are deserving of increased protection and should be rated the highest, whereas highly altered parts could be targeted for restoration or enhancement.

As of July 2009, the draft designation of Region 1 SHAs has been created and incorporated into the Biodiversity/Wildlife Habitat Assessment. As part of the SHA analysis, the condition or "alteration state" of each area was rated and this information, combined with the occurrence of habitat targets determined their selection. The selected SHAs in the least altered condition were classified as "SHAs to protect" (the highest quality) and ranked as 10. Those slightly more altered were classified as "SHAs to enhance/restore," and ranked as 9. SHA selections only included submerged or wetland habitat types and were clipped to only extend 500 m from the water edge. Almost all of the SHAs in this area were Anadromous Fish Spawning Areas (AFSAs) or connected to AFSAs and had fish data to support their relatively high function. Even if potentially altered, these AFSAs would be critical to protect.

Download the final report for the Region 1 SHAs as well as the supporting document that provided the methodology at the following web site:
http://www.ncfisheries.net/habitat/chpp28.html

Literature cited (in Appendix G: References**)**